# Plastic Surgery of the Nares

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THE nares appeared early in the phylogenetic development of the animal kingdom and vary from the simple olfactory pits of the primitive fishes to such highly specialized development as the trunk of an elephant. In man, the appearance and function of the nares are more important than the olfactory sense, although reflex alteration in the diameter of the nares is easily demonstrable in the presence of strong odors.

Appearance of the nares has much to do with the pleasing appearance of the face. From a sculptural standpoint, the delicate "winged buttress" construc-

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Figure 1.—(a) Congenital cleft-lip showing extreme deformity of left naris. (b) Reconstruction of a normal naris at time of repair of cleft-lip.

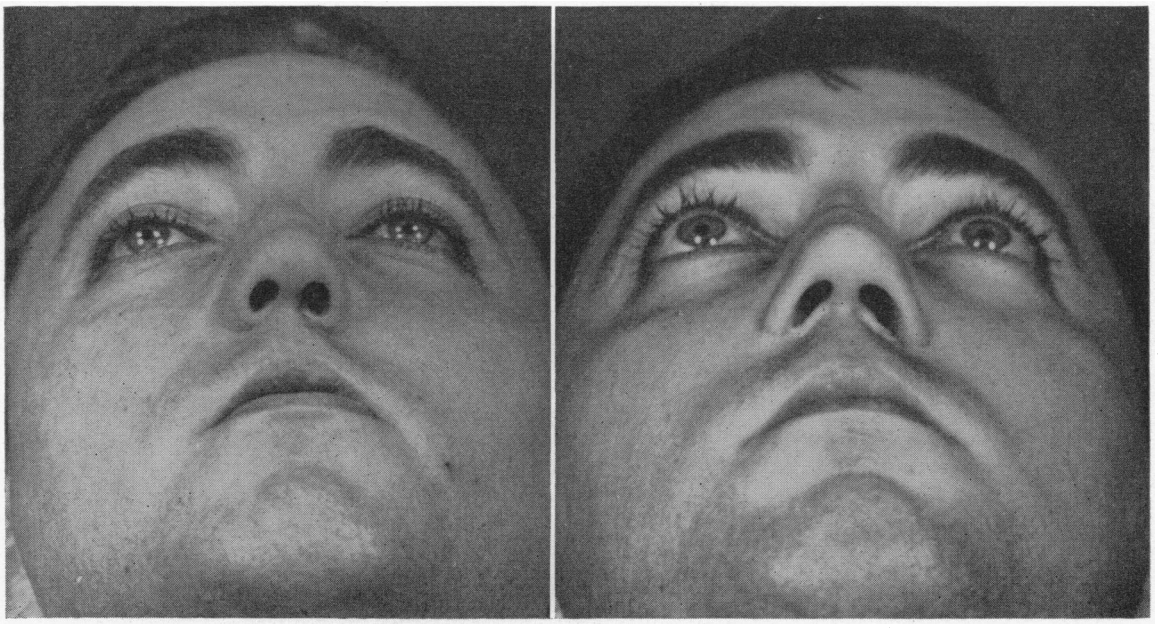

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Figure 2.—(a) Congenital micronares. This patient exp erienced difficulty in breathing. (b) Relief of stenosis of nares by the use of thick-split skin-graft.

tion of the external nares is especially important in the beauty of the normal nose. The great sculptress, Malvina Hoffman, has recorded myriads of racial, national, and tribal variations of the nares in her remarkable collection of sculpture, modeled from life in many countries throughout the world and preserved in bronze in the Field Museum of Chicago. The major continental variations such as African, Asiatic, and European types, are well recognized by the most casual observer.

Alterations in appearance of the nares occur with changes in emotion. The nares are thus essential elements in the production of facial expression. The alae are raised in laughter, dilated in heavy breathing, narrowed in distaste, and the entire tip is raised in scorn, wrinkling the skin over the nose. The nares are widely dilated with violent effort, droop with fatigue, and are elevated and widely dilated when gasping for air in exhaustion. Their calibre changes in synchrony with each respiration except during quiet breathing.

The function of the nares, in addition to those mentioned above, is the regulation of the temperature and rate and direction of flow of the stream of inspired air. In addition, a moderate screening effect is produced by the nasal hairs. The vibrissae, which play such an important tactile role in other mammalian species, are rudimentary or absent in the human.

### CONGENITAL DEFORMITIES OF THE NARES

Malformations of the nares occur with relative frequency and vary from the extreme deformities associated with cleft-lip (Fig. 1) to simple familial or individual unsightliness. Plastic surgical correction is indicated to aid in establishment of the patient's social and economic equality with his normal contemporaries. The sense of inferiority, which often is associated with a poor cosmetic appearance of the nose, can be extremely disabling in sensitive individuals.

Although considerable variation in size of the nares can occur without impairment of breathing, one occasionally sees nares which are so small as to cause mouth breathing and other symptoms of an impaired airway (Figs. 2 and 3). Plastic surgical correction requires the use of a thick-split skin-graft.

The converse situation, that of nares which are too

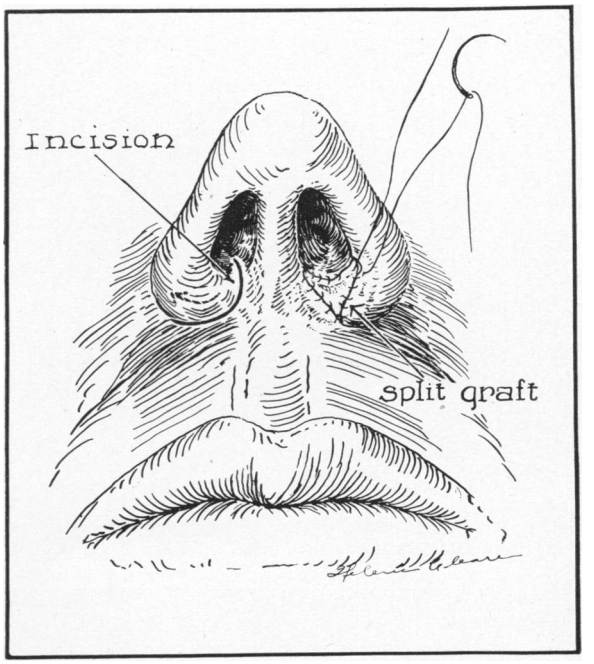


Figure 3.—Diagram showing technique for enlargement of nares.

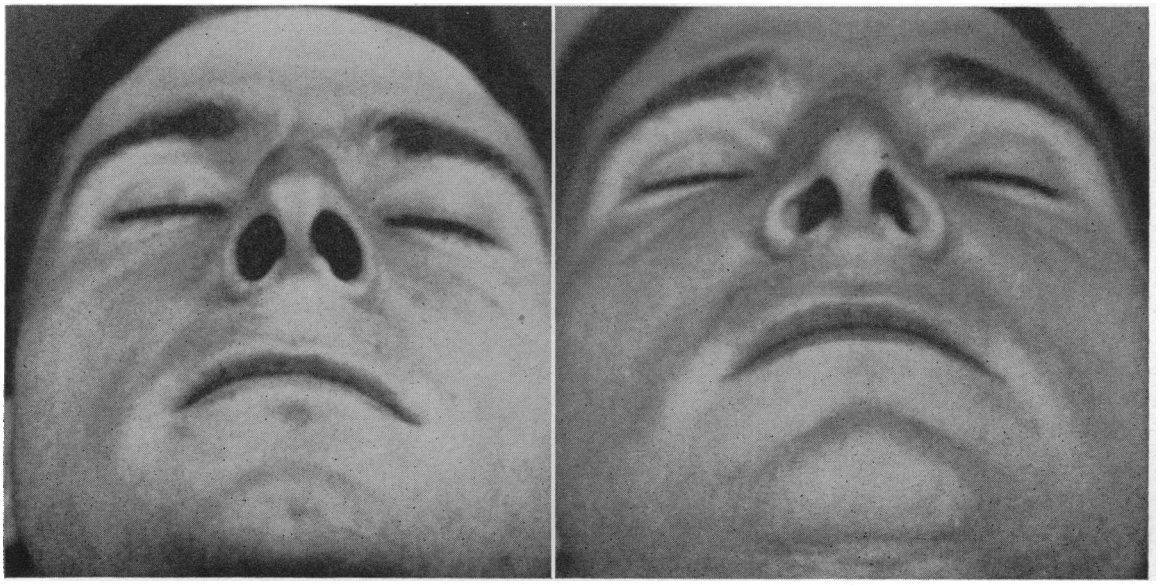

Figure 4.—(a) Macronares. (b) Normal appearance following plastic repair.

large, is usually due to two factors. First, there may be flaring of the base of the alae. This is corrected by excision of a wedge-shaped segment (Figs. 4 and 5). Secondly, there may be resiliency of the alar cartilage which acts as a spring, constantly dilating the nostril. Resection of a segment of the alar cartilage corrects this part of the deformity. One should cut almost completely through the cartilage in an antero-

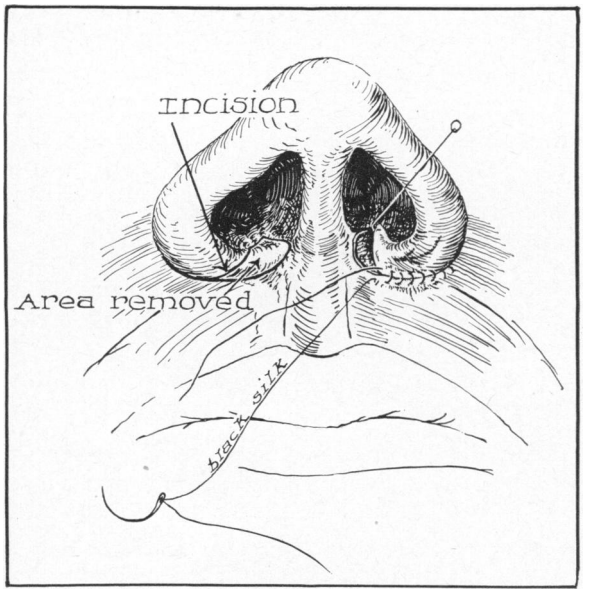


Figure 5.—Technique of reduction in size of nares.

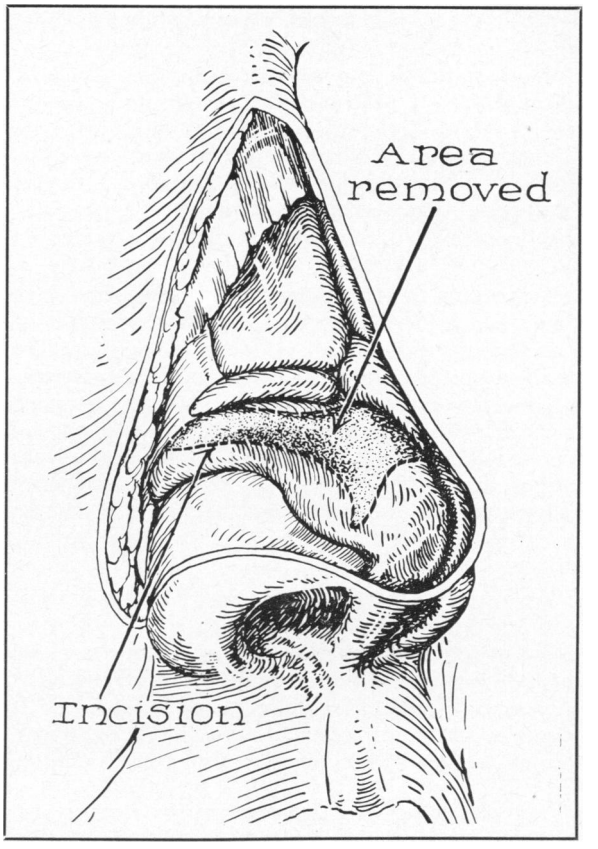


Figure 6.—Diagram of sector of alar cartilage which must be removed to give normal modeling to the nares.

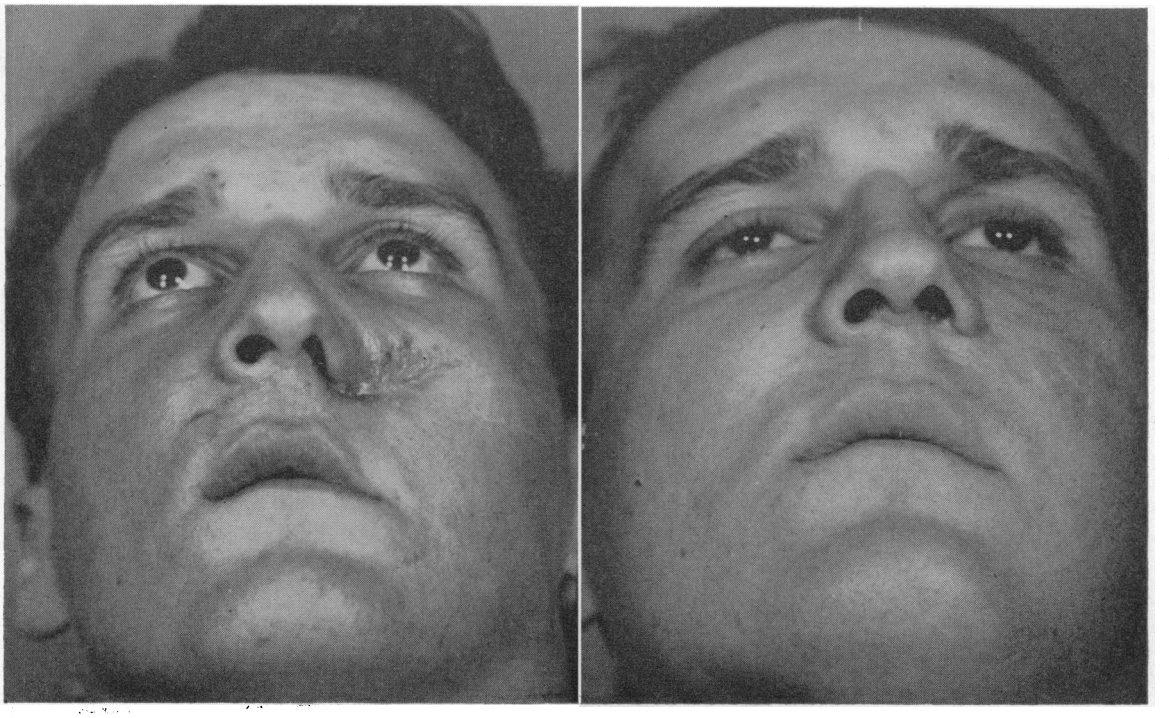

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Figure 7.—(a) Stricture of left naris following wound near the left naso-labial angle. (b) Appearance following plastic repair using the "sickle-flap" technique of New.

posterior direction, but not completely, as a collapsing ala may result (Fig. 6).

Congenital collapsing alae are sometimes seen and are corrected by grafting elastic cartilage from the opposite ala or from the concha of the ear, obtaining and placing the graft so that the inherent curvature of the donor site is employed to maintain an open ala in the transplanted position. Atresia of the nares may accompany congenital syphilis or occur spontaneously. Plastic repair involves the use of thick-split skin-grafts, as in traumatic stricture of the nares.

One cause of difficulty in certain patients arises from the fact that the nares on one side may be reduced in size by lateral displacement of the tip of the cartilaginous septum. This is not only unsightly, but may impair breathing on the affected side. Plastic repair involves shortening the septum and moving it into place behind the columella by freeing it from its attachment to the vomer.

Negroid flaring of the nostrils in persons of Caucasian heritage is often due to thickening which occurs following repeated trauma. This is especially true when accompanied by a crushed nasal bridge. The tip is depressed and the alae are widened, forming alae closely resembling those of the normal Negro. Surgical correction of the alae should accompany plastic repair of the nasal bridge. The nares are narrowed by wedge resection of the alar floor, as in the case of nostrils which are too large. When an excessively prominent tip is being reduced in height

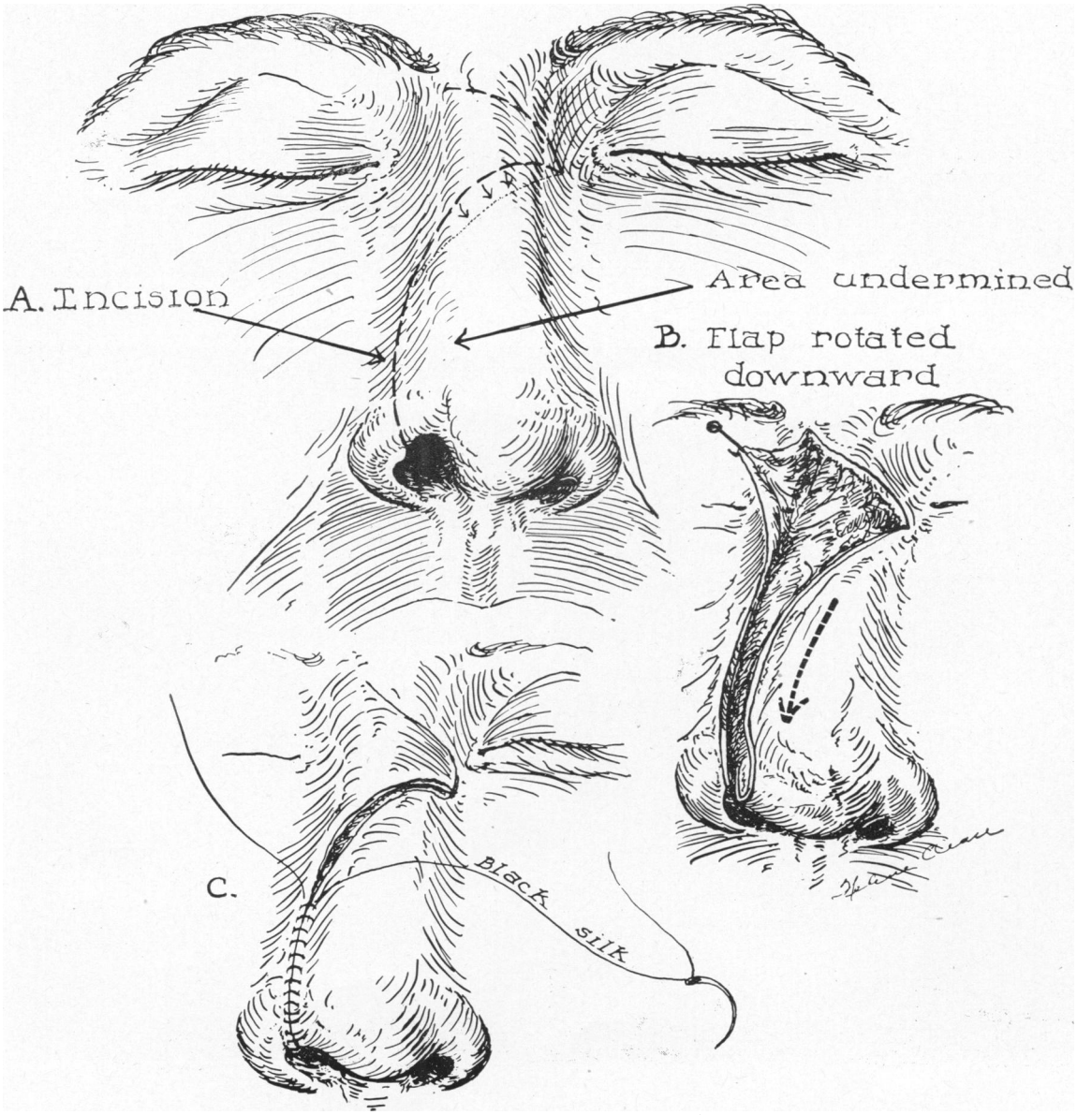
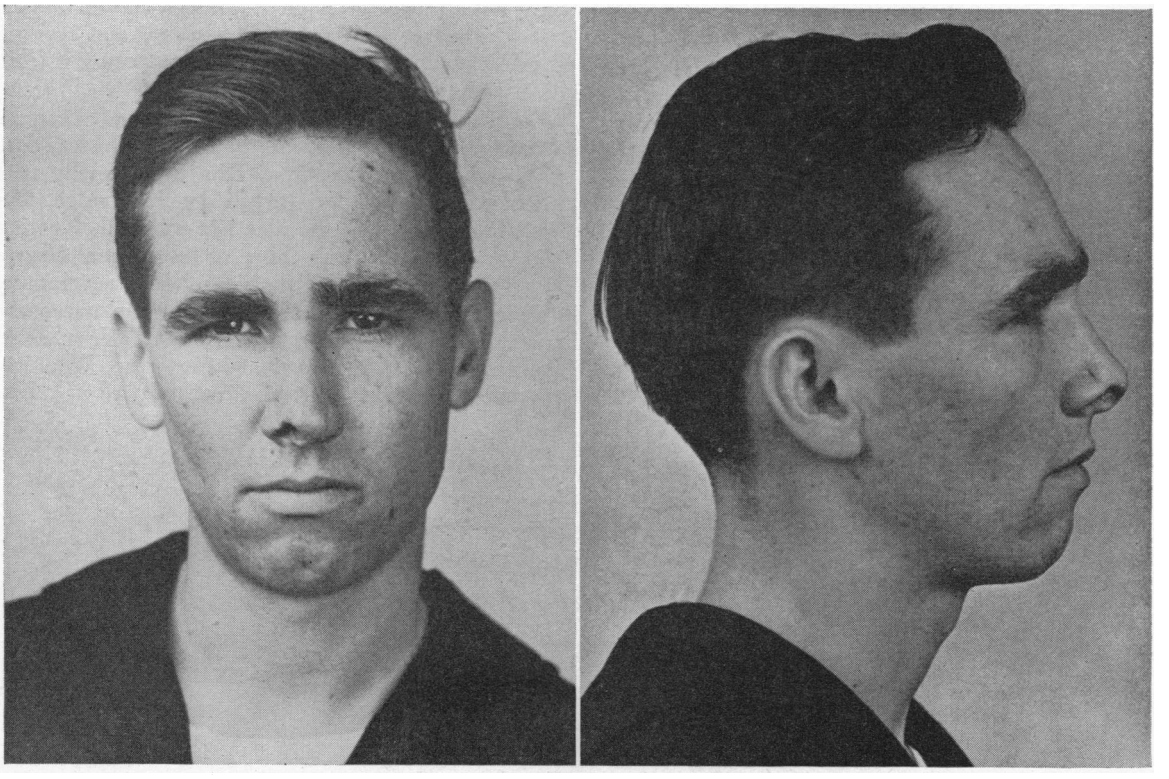



Figure 8.—Diagram showing technique for repair of small loss of ala by advancing local tissue.



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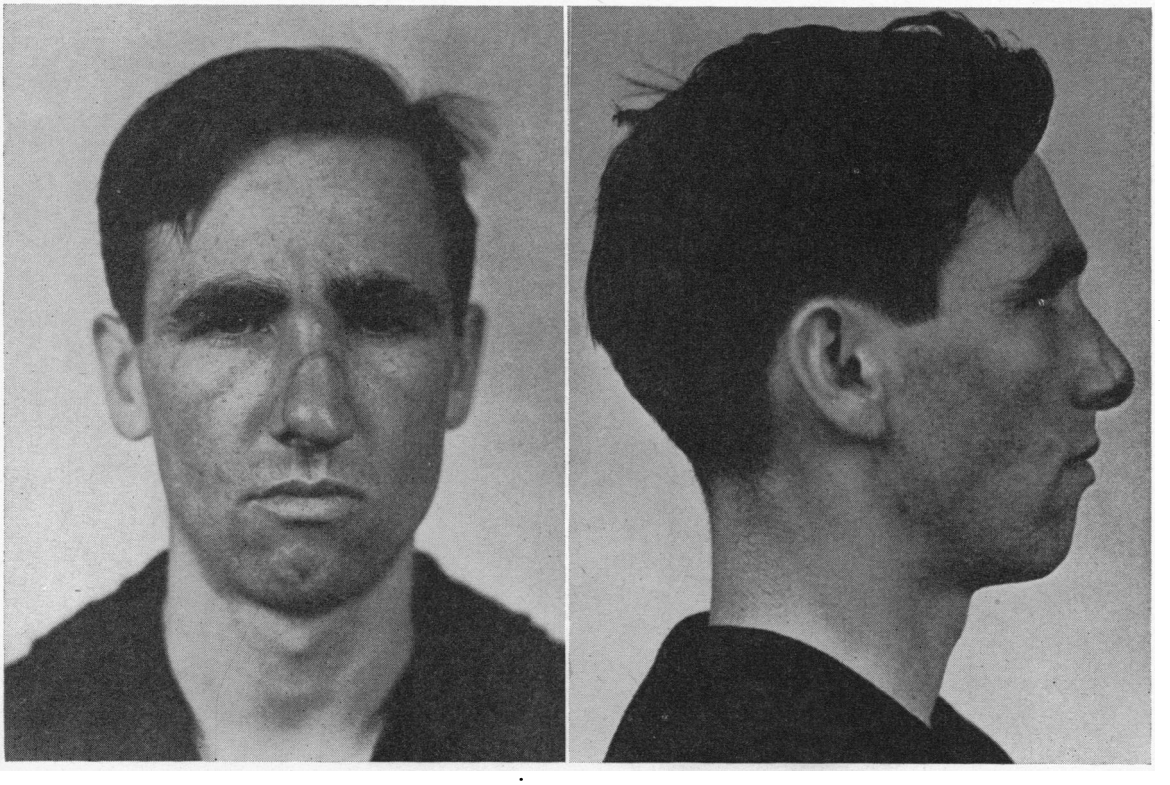

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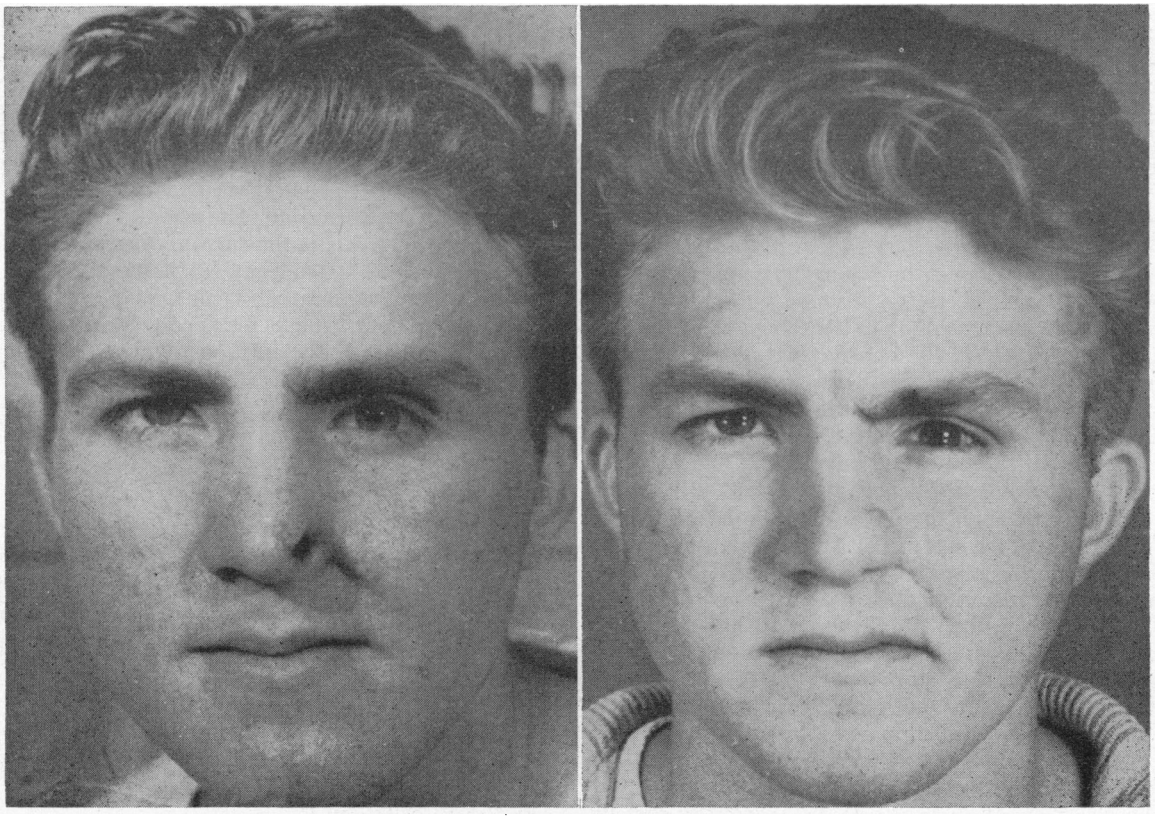
Figure 9.—(a and b) Preoperative appearance following loss of portion of alar tip on the right. (c and d) Postoperative appearance following plastic repair by advancing local tissue. (Photographs were taken immediately following suture removal to illustrate reddened lines of incision.)

during a nasal plastic operation it is often noted that a Negroid flare is produced as the tip is lowered. The alae should be reduced at the same time by the method described above.

The alae and the bulbous tip of an ugly nose can be effectively reshaped in conjunction with the removal of a nasal hump, narrowing of the bridge, or other cosmetic procedures. All too often, corrective procedures are carried out for the bridge and tip of the nose without due consideration for plastic repair



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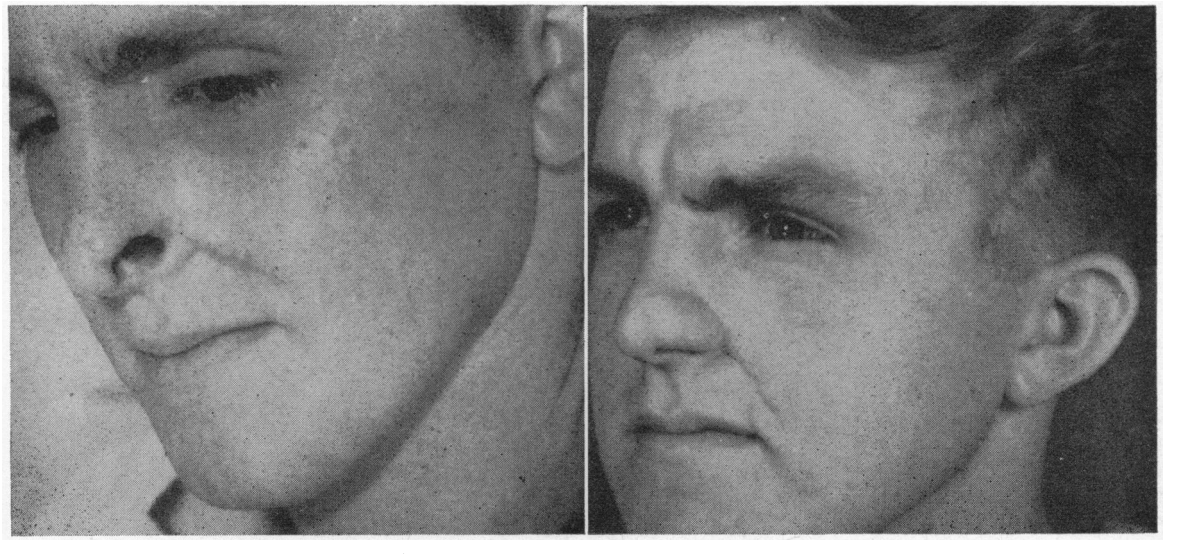

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Figure 10.—(a and c) Traumatic loss of left ala with resulting deformity of naris. (b and d) Appearance following plastic surgical correction by the "sickle-flap" technique of New.

of the alae. If attention is given to this necessary detail, a pleasing cosmetic appearance of the nares can be obtained.

### ACQUIRED DEFORMITIES OF THE NARES

Damage to the nares can occur as a result of infection, benign or malignant tumors, burns, blows, cuts, bites, and tearing injuries. There may be simple lacerations or complete avulsion. Loss of substance may greatly disfigure the nares or binding cicatrix may completely stenose the openings. Injuries to adjacent structures may also cause distortion of the nares due to late cicatricial contracture (Fig. 7).

Any laceration of the naris which cuts completely across its circumference will result in cicatricial stenosis of the naris. This is due to the fact that all scars contract along their long axis and, since the scar in such a laceration forms a ring, it can only contract by decreasing the diameter of the ring, producing stenosis. If the contracting ring is near the external opening of the naris, correction may be effected by the use of a "Z-plastic" operation. If the scarred ring is internal to the accessible area of the vestibule, a "Z-plastic" is impractical and a buried thick-split skin-graft is used to relieve the stricture.

Airway through the nares can also be obstructed by collapse of the columellar support. This may result from injury or infection or occasionally following a submucous resection of septal cartilage, which has been too extensive. The tip tends to fall downward and inward against the upper lip and the cross-sectional diameter of the naris is thus decreased. Plastic surgical correction involves the use of a cartilage graft to restore support to the tip.

The diameter and configuration of the nares can be changed by loss of substance of the alae or columella. Correction is directed toward the replacement of the tissue which has been destroyed. If only skin has been lost, a full-thickness skin replacement is indicated. If full thickness of the ala or columella has been destroyed a free graft of ear substance (containing all layers) or a pedicle-graft must be used for restoration. The use of free grafts of "skin-cartilage-skin" from the tip of the ear, or "skin-fat-skin" from the lobe, as free grafts has been recently popularized by Brown, Cannon and Dupertuis. Results, as illustrated in their cases, have been quite successful. An additional method of shifting local tissue which has been found to be useful is illustrated (Figs. 8 and 9).

Major losses of substance of an ala seriously disfigure the nares. Correction requires replacement of the missing tissue by similar tissue from a distance. Such tissue should most nearly match the color and texture of the missing part. Such flaps can be derived from the forehead, cheek, or neck. Excellent methods of replacement have been described by New (Figs. 7 and 10) and by Kazanjian. The use of a neck tube is more involved, matches the surrounding nasal tissue less well, and has a tendency for persistent redness for many months, creating a conspicuous repair of the nasal ala. In some instances, however, this method of repair is the method of choice, particularly when there are other facial defects to be corrected at the same time. The use of a cheek flap from the naso-labial fold is of value in older patients whose tissues are loose and stretch easily.

### SUMMARY

The nares are important in the cosmetic appearance and function of the nose. Abnormalities of congenital or acquired types are fairly common and are correctible by plastic surgical methods.

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